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FIGURES

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Figure 8.14-3 Tehama-Colusa Canal and Glenn-Colusa Canal System

Sources:
1) USGS Topographic 30x60 Minute Series: Lakeport, California, 1994
2) FEMA Flood Insurance Rate Map, Colusa County Plan, 1989

LEGEND

- Creek
- Sacramento River
- Wildlife Refuge
- County Line

Floodplains

- Zone A: 100-year flood
- Zone B: Areas between 100-year and 500-year flood
- Area not mapped for flooding potential

Detail Area: See Figure 8.14-2

PROJECT SITE

PG&E Compressor Station

SACRAMENTO NATIONAL WILDLIFE REFUGE

DELEVAN NATIONAL WILDLIFE REFUGE

GLENN CO
COLUSA CO.

Scale in Miles: 0 2 4

Scale in Feet: 0 10,000 20,000

1:100,000

N

SURFACE WATER FEATURES

Colusa Power Plant
Reliant Energy
Colusa County, California

43-00066841.00

URS

FIGURE 8.14-1

5/25/01 vsa ..\46800-930\swf.cdr

Sources:
1) USGS Topographic Maps, 7.5 Minute Series:
Logan Ridge, California, 1973
Logandale, California, 1973
Sites, California, 1973
Maxwell, California, 1994
2) Olmstead and Davis, 1961

LEGEND

- #1 — Test Well
- Canal
- Creek
- Seasonal Streams and Ditches
- Inactive Earthquake Fault (Refer to Section 8.15)
- Groundwater Storage Units (approximate boundaries)
  - B6 — Alluvial Fan, Delevan to Zamora
  - B11 — Stony Creek Fan
  - D3 — Colusa Basin

0 2000 4000
Scale in Feet
1:24,000

N

PROJECT SITE

PG&E Compressor Station

#1 #2 #3

CANAL-CROSS TIE

TEHAMA-COLUSA CANAL

GLENN-COLUSA CANAL

DELEVAN ROAD

DIRKS ROAD

DELEVAN ROAD

McDERMOTT ROAD

Hunters Creek

GLENN CO / COLUSA CO

Siphon

BM 91 BM 89 BM 112 BM 116 BM 100 BM 104 BM 96

BR 96 BR 87 BR 101 BR 126

5

Delevan

Flume

2 LANE

B11 B6 D3

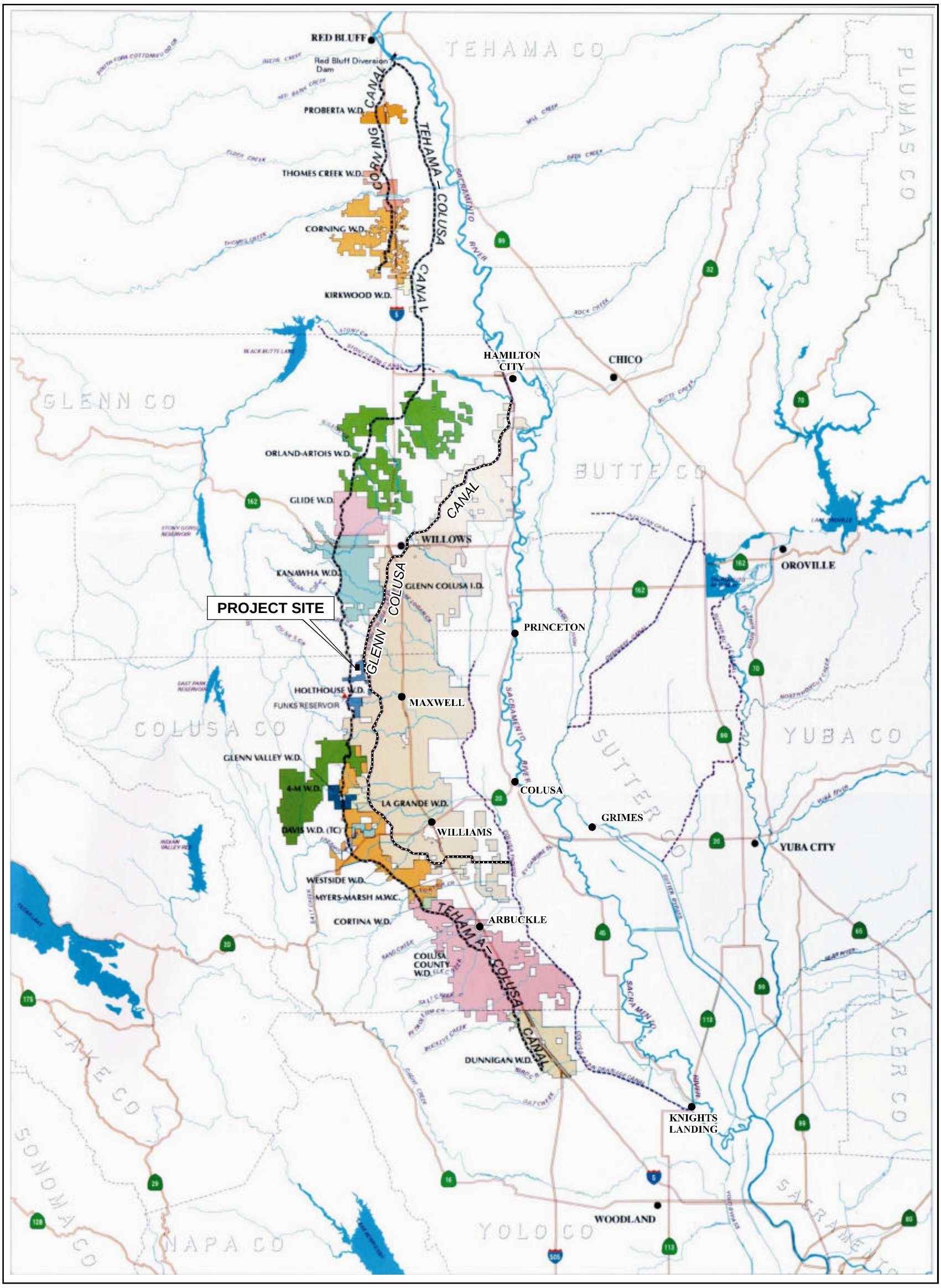
HYDROGEOLOGIC SETTING

Colusa Power Plant
Reliant Energy
43-00066841.00 Colusa County, California

URS

FIGURE 8.14-2

5/23/01 vsa ..\46800-930\hydro.cdr



Source:
Tehama-Colusa Canal Authority, July 1996

N

0 8 16

Scale in Miles

TEHAMA-COLUSA CANAL AND GLENN-COLUSA CANAL SYSTEMS

Colusa Power Plant
Reliant Energy
43-00066841.00 Colusa County, California

URS

FIGURE 8.14-3

5/16/01 vsa ..\46800-930\canalsys.cdr

APPENDICES [in Volume II]

Appendix O Groundwater Investigation
Appendix P Percolation Tests

8.14 WATER RESOURCES

This section evaluates the effects of the proposed project on water resources in the area of the Colusa Power Plant. Water for the project will be supplied by Glenn-Colusa Irrigation District (GCID) and conveyed to the plant via the Tehama-Colusa Canal. Plant wastewater will be processed by a zero liquid discharge system. Sanitary wastewater will be processed through a septic system and leach field.

The power plant and switchyard will occupy approximately 27.2 acres within the 200-acre project site, as illustrated in Figure 8.14-1. The site is currently undeveloped agricultural land used for grazing cattle. Site topography is rolling hills that range from 175 to 190 feet above mean sea level (msl). A portion of the site, approximately 62 acres, will be cut and filled to provide a level area for the power generation facility, switchyard, and construction laydown areas at an approximate elevation of 183 feet above msl.

The impacts of the project on beneficial water uses are expected to be too small to be significant.

The aspects of water resources that could potentially be affected by the proposed project include water supply, water quality, and flood hazards. The CEQA Guidelines and applicable laws, ordinances, regulations, and standards define significance criteria for compliance in each of these areas.

8.14.1 Affected Environment

This section describes the environment relative to water resource features in the area of the proposed project site.

8.14.1.1 Groundwater

The Colusa Power Plant site is located in the Sacramento Valley west of the Sacramento River. The Sacramento Valley is underlain by sediments that have been transported from the surrounding mountains by the Sacramento River and its tributaries. The site is located at the junction of three groundwater storage units within the Sacramento Basin: (1) the Colusa Basin; (2) the Stony Creek Alluvial Fan; and (3) an alluvial fan that extends from Delevan to Zamora (see Figure 8.14-2). The principal sources of groundwater in the basins are geologic formations known as the Plio-Pleistocene Tehama Formation and the overlying Quaternary alluvium. Estimated groundwater storage capacities and specific yields of these three groundwater storage units are summarized in Table 8.14-1. In the vicinity of the site, near the foothills west of the Sacramento River, the availability of groundwater may not be as reliable as available surface water sources. Although delineated on the map as distinct units, the boundaries of the groundwater basins are not well defined. When groundwater is found in the foothills, the supply generally is not reliable because the subsurface reservoirs are small and may dry up during the summer months (Colusa County, 1989). Based on conversations with local water agencies and well drillers, the area surrounding the site has not historically produced significant amounts of groundwater due to the availability of surface water and low production of groundwater.

Groundwater generally flows from the north in a southeast direction to the Sacramento River. In the winter, groundwater recharge occurs primarily by deep percolation of precipitation and stream water. Groundwater levels in Colusa County usually drop during the summer months but are recharged during the rainy winter season. Most recharge occurs in the northern Sacramento Valley, in Glenn and Tehama counties where rainfall is more abundant. During the summer, applied irrigation water also infiltrates to the groundwater basin.

The Sacramento River groundwater basin is the water source for community water delivery systems in Arbuckle, Colusa, Grimes, Maxwell, Princeton, and Williams (these communities are shown on Figure 8.14-3). Wells in these areas generally are 100 to 500 feet deep (Colusa County, 1989). The nearest water supply system to the site, the Maxwell Public Utility District, provides water service to

about 325 commercial and residential customers and operates a 100,000-gallon water storage tank and three wells with pumping capacities of 500, 800, and 1,000 gallons per minute (gpm). Water is supplied without treatment (Colusa County, 1989).

Three pilot holes (borings #1, #2, and #3) were recently drilled within the project property lines at the approximate locations indicated on Figure 8.14-2 to a depth of approximately 300 feet below ground surface (bgs). The groundwater investigation program is described in Appendix O. The purpose of this investigation was to assess the availability, quantity, and quality of local groundwater.

Coarse-grained water-bearing zones were encountered in two of the three holes drilled; at approximately 135 to 145 bgs in boring #1 and at approximately 210 to 240 feet bgs in boring #3. No coarse-grained water-bearing zones were encountered within the total depth of 320 feet in boring #2.

Based on lithology, boring #3 was selected for pump testing. Details of the step-drawdown pumping test are provided in Appendix O. The results of the test suggest that a potential yield for a well completed in the producing horizon between depths of about 220 to 240 feet at this location would be on the order of 200 gpm. However, a sustained safe yield for year round use has not been confirmed at this time.

8.14.1.1.1 Groundwater Quality

As described in the Colusa County General Plan (1989), groundwater quality in the Sacramento Valley as a whole is considered good for irrigation and domestic uses. The State Department of Water Resources (DWR) monitors domestic and agricultural wells for mineral content, primarily naturally occurring heavy metals. The DWR's primary concern relative to water quality in Colusa County is high concentrations of boron in some irrigation water and high concentrations of nitrates and chloride in some domestic water. The DWR has found that areas with higher than normal concentrations of nitrates are generally associated with sewage effluent as opposed to pesticides and herbicides. According to the DWR, there are currently no critical water quality problems in the county. The Central Valley Regional Water Quality Control Board (CVRWQCB) found no confirmed evidence of groundwater contamination in drinking water well tests that were recently conducted. However, higher than normal concentrations of several constituents have been found in certain areas of the county, including the area along the Sacramento River between Colusa and Grimes, which contained high concentrations of sodium and sulfate. In other instances, particularly where domestic wells are in close proximity to septic systems, nitrate contamination has been recorded by the Colusa County Environmental Health Department. (Colusa County, 1989)

The chemical analysis of groundwater pumped from onsite boring #3, reported in Appendix O, indicates that for the constituents analyzed, the groundwater meets drinking water standards, with the exception of turbidity and total dissolved solids.

8.14.1.1.2 Groundwater Beneficial Uses

Groundwater in the vicinity of the site has not been greatly developed for consumptive uses due to availability of surface water and low production of groundwater. Elsewhere in the county, groundwater is used as a source of drinking water.

8.14.1.2 Surface Water

The site is located within the Sacramento River Basin. Surface water runoff from the site and surrounding area is conveyed via both man-made canals and natural streams to the Sacramento River. Natural streamflows are interrupted by the various man-made canals and levees throughout the region. Surface water features are shown on Figure 8.14-1 at a scale of 1:100,000, and the hydrogeologic setting in the vicinity of the site is shown on Figure 8.14-2 at a scale of 1:24,000. The Tehama-Colusa and Glenn-Colusa Canal systems are shown on Figure 8.14-3.

The Sacramento River is the largest river in California. It starts west of Mount Shasta in Northern California and flows southward into Shasta Reservoir, through the Sacramento Valley, and then joins the San Joaquin River in the delta east of Suisun Bay. The Sacramento Valley extends from Red Bluff to the mouth of the Sacramento River at Suisun Bay, a distance of about 240 miles along the river. The area of the Sacramento Valley is approximately 5,000 square miles; the total area of the Sacramento River drainage basin is 25,548 square miles. (Olmsted and Davis, 1961)

The proposed project is located approximately 0.5 mile east of the Tehama-Colusa Canal, 0.8 mile south of the Canal Cross Tie, 0.7 mile north of a west-to-east flowing unnamed stream, and 0.75 mile west of the Glenn-Colusa Canal, as shown on Figure 8.14-2. The man-made canals convey water to various irrigation districts. Water for the Tehama-Colusa Canal comes from the Sacramento River at the Red Bluff Diversion Dam. The canal is 110.9 miles long (USBR, 2001), starting at the Red Bluff Diversion Dam, passing through Tehama, Glenn, and Colusa counties, and into Yolo County, and terminating about 2 miles south of Dunnigan, California. At the start of the canal, its capacity is 2,530 cubic feet per second (cfs); at the end, 1,700 cfs (USBR, 2001). The Tehama-Colusa Canal provides irrigation water to Colusa County lands west of Maxwell, Williams, and Arbuckle. In 1989, Colusa County was allocated 175,000 acre-feet and used about 100,000 acre-feet of water from the Tehama-Colusa Canal (Colusa County, 1989). Flow data are summarized in Table 8.14-2.

Water for the Glenn-Colusa Canal comes primarily from the Sacramento River at Hamilton City and is supplemented from Stony Creek in Glenn County several miles north of the site. Average monthly flows in 2000 for the Glenn-Colusa Canal at Hunters Creek are provided in Table 8.14-3. As reported in the Colusa County General Plan, an estimated 462,600 acre-feet of water was transported and delivered to Colusa County via the Glenn-Colusa Canal (Colusa County, 1989).

To accommodate the proposed plant, the 27.2-acre site and a 29.1-acre construction laydown area will be graded. The proposed site drainage plan is shown on Figure 3.5-3. Storm water runoff will be collected by a surface drainage system and conveyed to a 2.2 acre-foot sedimentation detention basin. The pond will be designed to detain the difference in runoff before-construction (pre-development) and after-construction (post-development) conditions. The detention pond will be designed to accommodate the peak runoff of the pre-development condition resulting from a 10-year, 24-hour storm event. The flow of storm water will generally follow the existing drainage pattern. A portion of the plant site will be curbed and storm water within this curbed area will be collected and conveyed to the zero liquid discharge system. Design criteria for the site drainage system are provided in Appendix A, Civil Engineering Design Criteria. The drainage ditches will be designed to convey the 10-year, 24-hour rainfall runoff and will be protected by erosion control fabric, riprap, concrete paving, or soil-cement to minimize erosion.

The natural drainage swale on the southwest corner of the site flows southeast for about 0.7 mile. It joins another drainage and flows east for 0.7 mile to the Glenn-Colusa Canal. It goes under the canal and heads east into a ditch that flows east for two miles and then joins Hunters Creek.

The seasonal drainages north of the site flow northeast towards the Canal Cross Tie. The natural flow of this drainage, which is tributary to Hunters Creek, is impeded by the Canal Cross Tie and the Glenn-Colusa Canal and becomes seasonally ponded against the canal embankments.

As shown on Figure 8.14-1, Hunters Creek flows to the east into the Colusa Drain/Trough, which flows south along the Delevan National Wildlife Refuge. Farther south and downstream, the Colusa Trough flows through and along the Colusa National Wildlife Refuge to the Colusa Basin Drainage Canal, and eventually discharges into the Sacramento River at Knights Landing, 20 miles north of downtown Sacramento.

8.14.1.2.1 Temperature

Water temperatures for the Glenn-Colusa Canal are provided in Table 8.14-3.

8.14.1.2.2 Existing Surface Water Quality

In general, Colusa County's surface water supplies are thought to be of good quality for agricultural and domestic use. Several studies have been conducted on water supplies downstream and upstream of the county to determine the effects of agricultural herbicides and pesticides, and to ensure that drinking water is safe. Although these studies have uncovered isolated problems, water quality on the whole is good (Colusa County, 1989).

Contamination of irrigation runoff with residues from rice-growing herbicides has led to concern over downstream water quality in the Sacramento River. These herbicides—Ordram, Bolero, and Basagran—are commonly used by rice growers for weed abatement purposes. Monitoring studies conducted by the California Department of Fish and Game (CDFG) and others have shown that fish losses in the Colusa Basin Drain and chemical residues in drinking water are due in part to contamination from the herbicides. In 1982, various state agencies and the rice industry began efforts to mitigate these problems. The California Department of Health Services and CDFG set action guidelines to protect public health and aquatic life, while the Department of Food and Agriculture (DFA) established a rice herbicide control program, which is administered by the local Agricultural Commissioner (Colusa County, 1989).

In 1986, California voters passed Proposition 65, the Safe Drinking Water and Toxics Enforcement Act, which prohibits businesses from discharging chemicals that cause cancer or reproductive damage into the drinking water supply, unless the business can prove that the chemical does not pose a significant risk. The effects of Proposition 65 on agriculture remain to be seen (Colusa County, 1989).

The State Water Resources Control Board (SWRCB) has been studying the Sacramento River since 1984 through its toxic substances monitoring program. Molinate and Thiobencarb, which are associated with rice herbicides, were detected in various places, particularly north of Sacramento. Heavy metals were also detected. These were attributed to runoff from inactive mines on a tributary of the river near Redding (Colusa County, 1989).

The CVRWQCB performed an assessment of the water quality within its jurisdiction. This study noted the presence of pesticides, polychlorinated biphenyls (PCBs), and excessive sediments in the Sacramento River drainage system in Colusa County. The presence of the pesticides was attributed to agricultural runoff. Erosion of the surrounding foothills was seen as the cause of sedimentation. Rice herbicide control programs have reduced the levels of pesticides in the water, but the source of the PCBs is unknown (Colusa County, 1989).

Results of water quality analyses for water samples collected recently from the Tehama-Colusa Canal and Glenn-Colusa Canal are presented in Table 8.14-4.

8.14.1.2.3 Surface Water Beneficial Uses

Beneficial uses of the Sacramento River include industrial, commercial, and domestic uses as well as irrigation, recreation, and the preservation of wildlife. The Tehama-Colusa and Glenn-Colusa canals provide water primarily for irrigation purposes.

8.14.1.2.4 Climate and Precipitation

The proposed project is located on the western side of the Sacramento River Valley. The subregion extends from Sacramento in the south to the Oregon border in the north. The climate is generally

characterized by hot dry summers and mild wet winters. Climate data from 1952 through 1988 for Williams, California, which is located approximately 19 miles south of the site, is summarized in Table 8.14-5. Average July and January temperatures are approximately 97°F and 55°F, respectively. Average annual precipitation is 15.64 inches, with an average monthly maximum precipitation of 3.26 inches in January.

Based on the National Oceanic and Atmospheric Administration Atlas 2 (NOAA, 1973), the 25-year, 24-hour and the 100-year, 24-hour rainfall amounts for the project site are approximately 3.5 inches and 4 inches, respectively.

8.14.1.2.5 Current and Proposed Water Use

The site is currently undeveloped agricultural land used for cattle grazing. Water conveyed in the Tehama-Colusa and Glenn-Colusa canals is used primarily for irrigation purposes.

The nearest water supply system is in Maxwell, approximately 5 miles south of the site. Its annual production capacity is about 3,700 acre-feet. Due to distance and limited capacity, use of this system was determined not to be feasible. Groundwater availability in the vicinity of the plant site may not be as reliable as available surface water sources. However, before the decision was made to reject this potential source of supply, three test wells were drilled on site to provide more information about the local groundwater regime. The test program, detailed in Appendix O and summarized in Section 8.14.1.1, suggested that a sustained potential yield of about 200 gpm might be available from one onsite location. However, a sustained safe yield for year round use has not been confirmed at this time. Because of the uncertainty about whether a reliable source of sufficient groundwater is available to meet the proposed project's water supply needs, use of groundwater as the sole or primary water supply source was determined to be less reliable than a surface water source.

The Glenn-Colusa Canal and the Tehama-Colusa Canal are proximate to the site. The proposed project's water requirements of approximately 300 acre-feet per year would be a small proportion of the water flowing through these systems, as described above. Existing water allocations to the Glenn-Colusa Irrigation District come from two sources: (1) GCID's Senior Water Rights (Pre-1914) and (2) Central Valley Project Water which is provided under contract by the U.S. Bureau of Reclamation (USBR). Numerous water districts along the Tehama-Colusa Canal receive water from the USBR. The water allocations to these water districts is subject to unlimited curtailment. Based on these considerations, a water supply from the Glenn-Colusa Irrigation District was determined to best meet the needs of the proposed project.

Because of sensitive biological resources west of the Glenn-Colusa Canal and the habitat provided by the canal itself, a water delivery method limiting adverse effects to this canal was investigated. Because of an existing wheeling agreement between the Glenn-Colusa Irrigation District (GCID) and the Tehama-Colusa Canal Authority (TCCA), water can easily be supplied by the GCID, wheeled to the TCCA, and extracted from the Tehama-Colusa Canal. The benefits of this delivery method include avoidance of sensitive biological resources including wetlands and vernal pools, avoidance of giant garter snake habitat, and avoidance of disturbance to a canal that feeds directly into the Sacramento River. Because the Tehama-Colusa Canal is a concrete-lined structure, it does not provide habitat for sensitive species, and the water supply pipeline route can be located to avoid sensitive species.

Water will be supplied by the GCID and conveyed to the plant via the Tehama-Colusa Canal through its existing wheeling agreement with the Tehama-Colusa Canal Authority. The will-serve letter from GCID is shown on Figure 7.1-1. The agreement with the GCID includes the following general terms:

1. Bureau of Reclamation approval of the transfer of 300 acre-feet.[1]

2. Approval of the project by the California Energy Commission.

3. Approval by the Colusa County Board of Supervisors, if necessary.

4. The completion of the appropriate CEQA documentation by the appropriate lead agency.

5. Mutually acceptable commercial terms for ensuring delivery of a water supply to the project, between GCID and Reliant Energy.

As described in Chapter 3, water will be conveyed from the Tehama-Colusa Canal to the generating facility by a new 4-inch-diameter, 2,300-foot-long buried pipeline. The water will be used to satisfy various process needs. The process needs include makeup water for the Heat Recovery Steam Generators (HRSG) and auxiliary boiler, water for the combustion turbine generator (CTG) inlet air evaporative coolers, general plant service water, stored firewater, and potable water.

The Water Balance Diagram, Figure 3.4-9, shows the power plant's water treatment processes and the distribution of treated water. Water treatment varies according to the quality required for each of the plant's various water uses. Details about the plant's water uses and treatment are provided in Chapter 9, Alternatives, and in Section 3.4.6 of this application. Briefly, the water uses at the plant include:

- Water for the HRSG, which requires demineralized-quality makeup water, includes recovered (distilled) water from the evaporator of the zero liquid discharge system.

- Makeup water for the CTG evaporative coolers, which is supplied from the raw water/fire water storage tank. Water evaporates in the coolers and is added to the inlet air to the turbine compressors.

- Service water, which will be used to cool equipment such as the CTG and steam turbine generator (STG) lubrication oil coolers, the CTG and STG generator coolers, air compressor after-coolers, steam cycle sample coolers, etc.

- A raw water/firewater storage tank will have a combined capacity of 400,000 gallons. Of this water, 220,000 gallons will satisfy 24-hour plant operation at summer peak conditions in case of water supply interruption. The balance of 180,000 gallons will be dedicated to the plant's fire protection water system.

- Potable grade water will be raw water supplied by GCID.

- Bottled water will be provided for drinking water purposes.

Daily and annual water consumptive requirements for the plant are summarized in Table 8.14-6. Average daily requirements are based on a continuous plant consumption at average annual operating conditions of 60°F and 72 percent relative humidity. Maximum daily requirements are based on water consumption at maximum operating conditions of 114°F and 10 percent relative humidity. Annual requirements are derived from the weighted daily requirements based on the equivalent plant availability of 95 percent, or 8,322 operating hours per year, and an expected plant load condition set at 46 percent duct firing. Table 3.4-9, Water Balances, provides the estimated daily continuous water flow rates in gallons per minute corresponding to the heat and material balance case descriptions presented in Table 3.4-1.

[1] Subject to a 25% maximum curtailment.

During construction, water will be supplied under Reliant's contract with GCID. Average daily use of construction water is estimated to be about 8,000 gallons. A maximum daily water usage is estimated at 85,000 gallons during the hydrotest. There will be three cycles of water to be disposed of during the hydrotest. Depending on the test or washing cycle, the water to be discharged may include some metals or detergents. The water used during the hydrotest will be tested. If suitable for discharge, it will be routed to the sedimentation/detention basin. If the water quality is not suitable for discharge, it will be transported by trucks to an approved offsite disposal facility.

8.14.1.2.6 Wastewater Discharge

The Water Balance Diagram, Figure 3.4-9, shows the power plant's wastewater streams and the disposition of wastewater. There are two separate wastewater collection systems. The first is the plant wastewater system, which collects wastewater from the CTG evaporative coolers and HRSGs, water treatment system, chemical feed area drains, and general plant drains. The second is the sanitary system, which collects sanitary wastewater from sinks, toilets, and other sanitary facilities and discharges it to an onsite septic system. For more details on these water streams see Section 3.4.6.

The plant wastewater system collects all wastewater generated in the operation of the plant and delivers it to a zero liquid discharge system. Wastewater streams, including CTG evaporative cooler and HRSG boiler blowdowns, are cycled through the water purification system and are returned to the demineralizer and CTG evaporative coolers as a makeup supply. Reject streams are concentrated in a rotary drum dryer.

General plant drainage consists of wastewater collected by sample drains, equipment drains, equipment leakage, and area washdowns. Wastewater collected in the general plant drainage system is routed through an oil/water separator and then to the evaporator and rotary drum dryer of the zero liquid discharge system. General plant drainage that potentially contains oil or grease is routed through an oily water separator.

The plant is designed to have no process wastewater discharge. All process water will be recycled. When the process water is too contaminated for further recycling, it will be evaporated. Residue from the evaporation process will be disposed as solid waste.

No county or municipal sanitary treatment facilities are located in the vicinity of the plant. All sanitary waste will need to be treated at the plant in an engineered treatment facility. Wastewater from sanitary facilities will be run through the plant septic tank. Wastewater effluent from the septic tank will be discharged into the ground through a leach field to be constructed just south of the power plant. Given an average daily plant population of 22 workers, 440 gallons per day effluent will flow into the septic tank and out into the leach field. The septic tank will be permitted by Colusa County Department of Health and Human Services Environmental Health Division. Effluent discharge through the septic tank and into the leach field will be approved by the CVRWQCB. The septic leach field will be designed to be in conformance with the CVRWQCB's "Guidelines for Waste Disposal from Land Developments." The leach field will be designed to be more than 100 feet away from existing domestic wells, public wells, and flowing streams, and more than 50 feet away from ephemeral streams and the property line.

A series of percolation tests was performed by Lux Engineering & Surveying, Inc. to provide a basis for leach field design. The results of this program are contained in Appendix P.

8.14.1.3 Flooding

The plant is located on a site that is elevated well above the local valleys. The current site topography is rolling hills that range in elevation from 175 to 190 feet above msl. After construction, the plant site will be at an approximate elevation of 183 feet above msl. As shown on Figure 8.14-1, the plant site is not

within or near the 100-year flood zone. The Colusa County General Plan map is based on FEMA Flood Insurance Rate Maps.

8.14.2 Environmental Consequences

To evaluate the environmental consequences of the proposed project relative to water supply, water quality, and flood hazards, the following criteria were used to determine whether project-related impacts would be significant. Impacts would be considered significant if the project would affect (by bulleted category):

- Groundwater
  - Substantially degrade groundwater quality.

- Surface Water
  - Substantially alter surface water chemistry or temperature;
  - Substantially alter the volume of water in a surface water body;
  - Contaminate a public water supply;
  - Substantially reduce the amount of water otherwise available for public water supplies;
  - Change currents or the course of direction of water movements in marine or fresh waters; or
  - Obstruct or alter any navigable water of the United States.

- Flood Hazard
  - Substantially increase the risk of flooding, erosion, or siltation; or
  - Change absorption rates, drainage patterns, or the rate and amount of surface runoff.

8.14.2.1 Groundwater

Construction, operation, and maintenance of the facility will not use groundwater. However, construction, operation, or maintenance of the facility could potentially impact groundwater quality through inadvertent spills or discharge that could then infiltrate and percolate down to groundwater. Excavation dewatering during construction is not anticipated. Infiltration from the septic leach field could potentially impact groundwater. The leach field will be permitted through the County Public Health Department, which will require the system to be protective of groundwater supplies.

Due to the clayey soils and depth to groundwater (in excess of 40 feet), degradation of groundwater is not expected. With implementation of the mitigation measures proposed in Section 8.14.4.1, Groundwater Mitigation, the potential impacts to groundwater will not be significant.

8.14.2.2 Surface Water

The proposed project will withdraw surface water wheeled from the Glenn-Colusa Canal to the Tehama-Colusa Canal, from where it will be piped to the proposed project. The project will withdraw approximately 300 acre-feet per year for consumptive uses from GCID's existing allotment of water. This volume is less than significant when compared to the approximately 2,000 cubic feet per second (9 million gpm) of canal flow past the site. Therefore, there will be no adverse impact on water supply or other users of this source.

Under normal operation of the facility there will be no discharge of process water to surface water bodies due to the zero liquid discharge system described in Section 3.4.7. Therefore, there will be no significant changes to canal or river water quality.

Construction, operation, or maintenance of the facility could impact surface water quality of local streams, canals, and the Sacramento River through inadvertent spills or discharges. Construction activities could also increase the potential for erosion and uncontrolled runoff of storm water contaminated with sediments or other pollutants that could impact surface water quality and sedimentation. The site drainage plan and erosion control plans of the proposed facility during and after construction are shown in Figures 3.5-2 and 3.5-3. Best Management Practices (BMPs) such as silt fences, hay bales, etc., will be used during construction to minimize the potential for erosion. A sedimentation basin will be provided to detain storm water runoff and sediment. With the project as designed and implementation of the mitigation measures proposed in Section 8.14.4.2, Surface Water Mitigation, the impacts to surface water quality will be less than significant.

Storm water collected in curbed areas of the plant will be collected and routed through an oily water separator before being conveyed to the zero liquid discharge system. Storm water within the curbed area has the highest likelihood of coming into contact with potential contaminants. Since no storm water from the curbed area will be discharged to local streams or canals, there will be no impact to surface water quality.

The project will not alter currents or direction of water flow since there will be no significant increase in discharges off site. Nor will it obstruct or alter navigable waters, since nearby streams are ephemeral.

8.14.2.3 Flooding

Development of roads, buildings, and other paved and impermeable surfaces will reduce the amount of storm water that infiltrates into the ground and will increase the amount of water that runs off the site. Runoff from most of the site will be routed through a detention pond that will reduce the rate of runoff leaving the site. Runoff from the curbed portion of the site will be collected and conveyed to the zero liquid discharge system. The net effect is expected to result in an insignificant increase in overall runoff volume from the site. Therefore, the project's impact on runoff volume and resulting increase in downstream flooding is considered less than significant.

The plant is located on a site elevated well above the 100-year floodplain. Storm water runoff will be routed to either a sedimentation/detention basin or to the oily water separator and the zero liquid discharge system. The plant site will be graded, as shown on Figure 3.5-2, to promote drainage to prevent onsite flooding and minimize the potential for flooding to neighboring areas. All new structures must be designed to accommodate possible flooding in accordance with the Colusa County Building Code. No significant impacts related to flooding are expected as a result of the proposed project.

8.14.3 Cumulative Impacts

The project uses a very small amount of water (a maximum of 300 acre-feet per year). This would have a negligible effect on surface water availability in the region. Because the project would not increase net extraction from the canal and there would be no discharge to surface water bodies, it would not contribute to cumulative impacts to water resources in the area.

8.14.4 Mitigation Measures

This section discusses mitigation measures proposed by the Applicant that will be implemented to ensure that project-related impacts to water resources are less than significant.

8.14.4.1 Groundwater

WR – 1 Proper implementation of Best Management Practices (BMPs) during construction and throughout project operation (e.g., spill prevention and control, preventative maintenance, hazardous materials management), as well as adherence to all applicable codes and permits, will help minimize the potential for contamination of groundwater. Disposal of dewatering effluent is discussed in Section 8.13.2.1 (Waste Management). No significant impacts to groundwater are anticipated.

8.14.4.2 Surface Water

WR – 2 As discussed in Section 8.9.1.4 (Agriculture and Soils; Soil Loss and Erosion), impacts to surface water from erosion are expected to be minimal during construction. Erosion will be controlled in accordance with an approved Erosion Control Plan as discussed in Section 8.9.2.2 (Agriculture and Soils; Construction). In addition, all construction activities will be performed in accordance with the California National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharge Associated with Construction Activities (SWRCB, 1999), requiring the implementation of BMPs to control sediment and other pollutants mobilized from construction activities.

Temporary BMPs are discussed in Section 8.9.3.1 (Agriculture and Soils; Temporary Erosion Control Measures) and may include revegetation, slope stabilization, construction of berms and ditches, and sediment barriers such as straw bales or silt fences to prevent sediment discharges from the site. These measures will be developed and described for the construction activities in a Construction Storm Water Pollution Prevention Plan (SWPPP) that must be prepared before construction begins. With proper implementation of BMPs, no significant impacts to surface water quality are anticipated during short-term construction activities. In addition, use of existing infrastructure will minimize physical impacts from construction activities. No significant impacts to surface water are anticipated as a result of construction activities.

WR – 3 Permanent erosion control measures are discussed in Section 8.9.3.4 (Agriculture and Soils; Permanent Erosion Control Measures) and include drainage systems and revegetation. Operation of the facility will be in conformance with the California NPDES General Permit for Storm Water Discharge Associated with Industrial Activities (SWRCB, 1997). In accordance with this permit, an industrial SWPPP will be developed, and BMPs will be implemented to control pollutants in storm water discharges. BMPs will include refueling and maintenance of equipment only in designated lined and/or bermed areas, isolating hazardous materials from storm water exposure, and preparing and implementing spill contingency plans in specified areas. With proper implementation of these and other BMPs in the SWPPP, no significant impacts to surface water quality are anticipated during the long-term operation of the facility.

8.14.5 Laws, Ordinances, Regulations, and Standards

The primary agency for regulating surface water and groundwater pollution in California is the Regional Water Quality Control Board (RWQCB). The State Water Resources Control Board (SWRCB) delegates authority for implementation of regulations to RWQCB but creates general policies and plans. The SWRCB and RWQCB are agencies within the California Environmental Protection Agency. The federal agencies (e.g., U.S. EPA) have delegated most authority on water pollution issues to the state. Consequently, the RWQCB determines allowable concentration limits for effluents, issues permits, and enforces the regulations.

Local water districts, water suppliers, and health departments may also act when a pollutant has the potential to threaten their drinking water supply. Effluent limitations, and toxic and effluent standards are established pursuant to Sections 301, 302, 303(d), 304, 307, and 316 of the Clean Water Act (CWA).

The RWQCB for the Central Valley Region produced the most recent *Central Valley Water Quality Control Plan* in 1998. This document outlines general water quality goals for the Sacramento and San Joaquin valleys. Industrial service supply water (e.g., process water supply) is identified as a beneficial use and as such has "essentially no water quality limitations except for gross constraints…" (CVRWQCB, 1998).

The proposed project will operate in accordance with all applicable laws, ordinances, regulations and standards (LORS). The LORS that are potentially applicable to the water resources components of this project are identified below. Several LORS involve conformance only by reporting to the applicable agency if a spill or release occurs or require notification/approval for structural work within a surface body, etc. The LORS that require permitting are discussed in Section 8.14.7. Project conformance with the LORS is summarized in Table 8.14-7.

8.14.5.1 Federal

The Clean Water Act of 1977 (including 1987 amendments) §402; 33 USC §1342; 40 CFR Parts 122-136

Administering Agency: RWQCBs

Compliance: In lieu of an NPDES Permit, the project will use Notices of Intent (NOIs) to comply with the general NPDES requirements that regulate storm water and other discharges to water by establishing effluent limitations and monitoring and reporting requirements as described in Section 8.14.7.

USBR's February 1993 Interim Guidelines for Transferring CVP Project Water

Administering Agency: U.S. Bureau of Reclamation

Compliance: CPP will secure required U.S. Bureau of Reclamation approval and required NEPA compliance, if any.

8.14.5.2 State

California Porter-Cologne Water Quality Control Act of 1998; California Water Code §13000-14957; Division 7, Water Quality

Administering Agency: SWRCB, RWQCB

Compliance: Discharge of waste to land, such as septic leach fields, must comply with the Waste Discharge Requirements.

The Porter-Cologne Act established the jurisdiction of the nine California RWQCBs, granting them the authority to issue Waste Discharge Requirements (WDRs) that impose annual discharge fees and establish discharge limits, operation and maintenance requirements for treatment equipment, and monitoring, record keeping, and reporting requirements.

The septic leach field will be designed pursuant to the Guidelines for Waste Disposal from Land Developments and will be permitted by the Colusa County Department of Health and Human Services, Environmental Health Division.

California Water Code (CWC) § 13550 et seq.

Administering Agency: SWRCB; RWQCB

Compliance: Requires use of reclaimed water where available and appropriate. The SWRCB also adopted Resolution 75-58, which encourages the use of waste water for power plant cooling and established the following order of preference for cooling purposes:

1. Wastewater discharged to the ocean
2. Ocean water
3. Brackish water or irrigation return flow
4. Inland wastewater with low total dissolved solids
5. Other inland water

The project will utilize air cooling and a zero liquid discharge technology that will reduce the amount of water used by the plant. There are no reclaimed water sources nearby.

California Water Code § 13260

Administering Agency: RWQCB

Compliance: Requires a Report of Waste Discharge (ROWD) for any discharge waste that could affect the "quality of the waters of the State, other than into a community sewer system." This relates to the discharge of waste in the septic leach field, which will comply as discussed above.

California Water Code §13271-13272; 23 CCR §2250-2260

Administering Agency: RWQCB; California Office of Emergency Services

Compliance: Requires filing a report of release of specified reportable quantities of hazardous substances including oil and petroleum products when the release is into or will likely discharge into waters of the State.

California Constitution, Article 10 §2

Administering Agency: SWRCB

Compliance: Prohibits waste or unreasonable use of water. The project will recycle water and will use a zero liquid discharge technology.

The California Safe Drinking Water and Toxics Enforcement Act (California Health & Safety Code 25249.5 et seq.)

Administering Agency: RWQCB

Compliance: Prohibits actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity. The project will not discharge process water.

8.14.5.3 Local

Colusa County General Plan (Colusa County, 1989)

Administering Agency: Colusa County

Compliance: The project will minimize sedimentation and erosion through control of grading, vegetation removal, and placement of roads (CO-14). There will be no development in the 100-year flood plain (SAFE-2). The project will protect local water rights and interests (WA-1). The project will use water from the Glenn-Colusa Canal for industrial use and thereby support efforts which enable waters of the Glenn-Colusa Canal to be used for municipal and industrial uses (WA-10). The project will avoid extensive alteration of natural creeks and destruction of riparian vegetation (FL-3).

8.14.6 Involved Agencies and Agency Contacts

Issue	Agency/Address	Contact/Title	Telephone
Water Quality	State of California Environmental Protection Agency California Regional Water Quality Control Board, Central Valley Region 3443 Routier Road, Suite A Sacramento, CA 95827-3003	R. Kyle Erickson, P.E., Associate Engineer	(916) 255-3364
Water Supply	Tehama-Colusa Canal Authority 5513 Highway 162 PO Box 1025 Williams, CA 95988	Arthur R. Bullock, General Manager and Chief Engineer	(530) 934-2125
Water Supply	Glenn-Colusa Irrigation District 344 East Laurel Street PO Box 150 Williams, CA 95988	O.L. (Van) Tenney, General Manager	(530) 934-8881
Water Supply	U.S. Bureau of Reclamation 1140 West Wood Street PO Box 988 Williams, CA 95988	Donald A. Bultema, Chief	(530) 934-1361
Water Quality	Colusa County Department of Health & Human Services, Environmental Health Division 2967 Davison Court, Suite C Colusa, CA 95932	Jaime Favila, Director of Public Health	(530) 458-0397

8.14.7 Permits Required and Permit Schedule

This section describes the required permits related to water resources for the Colusa Power Plant. The following table summarizes these required permits. Additional details on information required for each permit application and where the required information can be found in this document is provided in Table 8.14-8.

Responsible Party	Permit/Approval	Schedule
U.S. Bureau of Reclamation	Outgrant from the Bureau of Reclamation (allows water to be withdrawn from Tehama-Colusa Canal)	90 days prior to construction
Central Valley RWQCB	Construction Activities Stormwater General Permit; California RWQCB Water Quality Order 99-08-DWQ (Addresses storm water during construction)	30 days prior to construction

Responsible Party	Permit/Approval	Schedule
Central Valley RWQCB	Low Threat Water Discharge Permit; California RWQCB Central Valley Region Order 5-00-175 (Allows discharge of short duration or low-threat wastewater)	In process
Central Valley RWQCB	Industrial Activities Stormwater General Permit; California RWQCB Water Quality Order 97-03-DWQ (Addresses storm water during plant operation)	30 days prior to start of plant operations
Colusa County Department of Health and Human Services, Environmental Health Division	Colusa County Regulations; Septic Facility Permit (Allows operation of septic leach field)	30 days prior to start of plant operations

The proposed project will withdraw surface water from the Tehama-Colusa Canal. The U.S. Bureau of Reclamation requires application for an outgrant to construct water delivery facilities to withdraw water from the canal. The application is submitted to the TCCA for initial review prior to being forwarded to the Bureau of Reclamation for review and approval. The application will be submitted at least 90 days prior to start of construction.

The California State Water Resources Control Board Water Quality Order 99-08-DWQ: "National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction Activity (General Permit)" authorizes a general permit for storm water discharges associated with construction activities that disturb more than five acres. Construction activities subject to the permit include cleaning, grubbing, grading, stockpiling, and excavation activities. The General Permit requires submittal of an NOI to comply with the permit and the development of a SWPPP for construction activities. The SWPPP will describe BMPs to prevent storm water pollution during construction activities. BMPs include erosion controls, sediment controls, and other controls to prevent storm water from contracting pollutants. The SWPPP will also include a storm water monitoring program.

The California Regional Water Quality Control Board Central Valley Region Order 5-00-175 "Waste Discharge Requirements General Order for Dewatering and Other Low Threat Discharges to Surface Waters" addresses potential discharges of low water quality-threat wastewater. Such discharges include: (1) short duration (four months or less) or (2) low flow (average dry weather discharge does not exceed 0.25 million gallons per day). Types of discharges covered by this permit include: (1) well development water; (2) construction dewatering; (3) pump/well testing; (4) pipeline/tank pressure testing; (5) pipeline/ tank flushing or dewatering; (6) condensate; (7) water supply system; and (8) miscellaneous dewatering and low-threat discharges. See Table 8.14-8, page 2, for information required on the permit application.

The California State Water Resources Control Board Water Quality Order No. 97-03-DWQ "General Permit to Discharge Storm Water Associated With Industrial Activity" authorizes a general permit to regulate industrial storm water discharges. An NOI will be filed with the CVRWQCB prior to commencement of operation. In accordance with NPDES permit requirements, a SWPPP that addresses storm water pollution prevention during operations must be developed. The SWPPP will identify BMPs to be used at the facility and a storm water monitoring program.

The plant will operate as a zero liquid discharge system as described in Chapter 3, and there will be no discharge of process water to surface water bodies. Pursuant to the California Water Code Section 13260, a ROWD must be filed with the CVRWQCB if a project will discharge waste that could affect the quality of the waters of the state. Form 200, Application/Report of Waste Discharge, General Information for NPDES Permits and Waste Discharge Requirements, will be filled out and submitted to start the

application process for waste discharge requirements for the discharge of wastewater to the septic leach field. This application is not required for the NPDES permit, since the project will use the permit NOIs to comply with the General NPDES permit requirements. All storm water runoff outside the curbed areas will be discharged to the sediment basin prior to being discharged offsite to surface water.

For compliance and control of sanitary wastewater, a permit will be obtained from the Colusa County Department of Health and Human Services, Environmental Health Division, for the septic leach field. The system will be designed in accordance with the CVRWQCB's "Guidelines for Waste Disposal from Land Developments."

8.14.8 References

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Planert, M., and J. S. Williams. 1995. *Groundwater Atlas of the United States—Segment 1 California and Nevada*: U.S. Geological Survey Hydrologic Investigations Atlas 730-B, 28 pp.

SWRCB (State Water Resources Control Board). 1999. *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 99-08-DWQ.*

SWRCB (State Water Resources Control Board). 1997. *National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001 (General Permit) Water Quality Order No. 97-03-DWQ Waste Discharge Requirements (WDRs) for Discharge of Storm Water Associated with Industrial Activities Excluding Construction Activities.*

USBR (U.S. Bureau of Reclamation). 2001. Web site: http://dataweb.usbr.gov/html/sacramento.html.

U.S. Department of Commerce. 1994. *Climatological Data Annual Summary, California*.

USGS (United States Geologic Survey), *Quadrangle California 7.5 Minute Series Topographic Maps:*
Logan Ridge, CA, 1973
Logandale, CA, 1973
Sites, CA, 1973
Maxwell, CA, 1994

Table 8.14–1
Estimated Groundwater Storage Capacity

Ground-Water Storage Unit	Area (acres)	Depth (feet)							
		20-50		50-100		100-200		All Zones (20-200)	
		Specific Yield (percent)	Storage (acre-feet)	Specific Yield (percent)	Storage (acre-feet)	Specific Yield (percent)	Storage (acre-feet)	Specific Yield (percent)	Storage (acre-feet)
Colusa Basin	195,640	4.6	272,000	3.4	335,000	5.7	1,121,000	4.9	1,728,000
Stony Creek Alluvial Fan	185,840	10.4	583,000	9.6	891,000	7.7	1,438,000	8.7	2,912,000
Alluvial Fan, Delevan to Zamora	129,730	5.9	229,000	6.0	392,000	5.9	768,000	5.9	1,389,000

Reference: Olmsted and Davis, 1961.

Table 8.14-2
Average Monthly Flows in 2000
Tehama-Colusa Canal

Time Period	Flow (cfs)
January	47
February	0
March	59
April	194
May	324
June	633
July	525
August	414
September	138
October	62
November	2
December	1

Source: Date provided by Tehama-Colusa Canal Authority

Notes: cfs = cubic feet per second
Flows recorded at Check 16, the measuring station closest to the proposed point of diversion

Table 8.14-3
Water Flows and Water Quality in 2000
Glenn-Colusa Canal at Hunters Creek

Time Period	Electrical Conductance (mmhos/cm)	Flow (cfs)	Temperature (°F)
January	0.91	5	48
February	0.83	8	49
March	0.70	7	56
April	0.27	15	53
May	0.31	30	67
June	0.46	8	65
July	0.36	15	75
August	0.39	25	79
September	0.39	1	71
October	0.42	1	66
November	0.26	10	55
December	0.27	45	52
April-October Mean	**0.35**	**14**	**68**
Yearly Mean	**0.38**	**13**	**61**

Source: Data provided by GCID.

Notes: Electrical conductance (E.C.) is provided in millimhos per centimeter (mmhos/cm) and is an indication of Total Salt Content. E.C. in the range of 0 to 1 mmhos/cm is considered suitable for irrigation under most conditions.

cfs = cubic feet per second.

°F = degrees Fahrenheit.

Table 8.14-4
Tehama-Colusa Canal and Glenn-Colusa Canal Water Analyses

Water Quality Parameter	Tehama-Colusa (3/5/01)[a]	Tehama-Colusa (4/11/01)[b]	Glenn-Colusa (3/8/01)[a]
Turbidity	–	3.8 NTU	–
Color	–	10	–
pH	8.3	–	7.7
Total Suspended Solids	35 mg/L	12 mg/L	20 mg/L
Total Dissolved Solids	94 mg/L	92 mg/L	88 mg/L
Hardness as $CaCO_3$	62 mg/L	69 (75) mg/L	46 mg/L
Calcium	20 mg/L	15 mg/L	–
Magnesium	2.9 mg/L	7.6 mg/L	–
Sodium	8.0 mg/L	8.8 mg/L	–
Potassium	–	1.2 mg/L	–
Barium	28 µg/L	<0.1 mg/L	40 µg/L
Beryllium	2.3 µg/L	–	<2 µg/L
Total Alkalinity	78 mg/L	60 mg/L	46 mg/L
Bicarbonate	78 mg/L	60 mg/L	46 mg/L
Sulfate	7.4 mg/L	8.1 mg/L	5.4 mg/L
Chloride	5.4 mg/L	4.5 mg/L	3.5 mg/L
Nitrate	–	1.2 mg/L	–
Fluoride	–	<0.1 mg/L	–
Arsenic	< 0.005 mg/L	<0.01 mg/L	<0.005 mg/L
Iron	–	<0.1 mg/L	–
Boron	–	<0.1 mg/L	–
Silica	–	8.8 mg/L	–

Notes:
Preliminary data, have not yet been validated.

µg/L micrograms per liter
mg/L milligrams per liter
NTU nephelometric turbidity units
– not analyzed

[a]Water Analysis by Curtis & Tomkins, Ltd.
[b]Water Analysis by STL Chromalab

Table 8.14-5
Climate Summary for Williams, California
Period of Record: 1952 to 1988

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (°F)	54.5	60.8	65.8	73.2	82.1	91.2	96.6	94.6	89.1	79.2	64.6	55.4	75.6
Average Min. Temperature (°F)	36.1	39.0	41.3	44.8	52.0	58.3	60.4	58.4	54.8	48.3	40.6	36.5	47.5
Daily Max. Extreme Temp. (°F)	83	83	88	97	102	112	113	115	109	100	91	76	115
Daily Min. Extreme Temp. (°F)	22	25	27	31	35	45	45	46	39	33	23	21	21
Average Total Precipitation (inches)	3.26	2.61	1.80	1.00	0.27	0.20	0.03	0.07	0.34	0.80	2.37	2.88	15.64
Average Total Snowfall (inches)	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Average Snow Depth (inches)	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Western Region Climate Center
http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?cawilm+nca

Table 8.14-6
Colusa Power Plant Daily and Annual Average Water Consumption Requirements

Water Service/Use	Average Daily Use (US gpm)	Maximum Daily Use (US gpm)	Annual Use (acre-feet)
Demineralized Water to Steam Cycle Makeup	25	43	51
Filtered Water to CTG Evaporative Coolers	12	129	24
Raw Water to Service Water System	13	13	20
Raw Water to Potable Water System	5	5	8
Miscellaneous Users	9	34	8
Recovered Water from Zero Liquid Discharge	(34)	(73)	(58)
Total Plant Water Usage Requirements	**30**	**151**	**53**

Table 8.14-7
Applicable Water Resources Laws, Ordinances, Regulations, and Standards

Laws, Ordinances, Regulations, and Standards	Administering Agency	Applicability	AFC Section
Federal			
CWA	RWQCB	Regulates discharges of wastewater and storm water to protect nation's waters. Applies to wastewater discharged to septic leach field and storm water runoff.	Discharges of wastewater subject to WDR permit and storm water subject to NPDES permits (Sections 8.14.2.1 and 8.14.2.2). Permits (Appendix 8.14-1) to be obtained through SWRCB.
RCRA	RWQCB	Controls storage, treatment, disposal of hazardous waste.	Hazardous waste will be handled and stored in conformance with Subtitle C. Section 8.13.4.
CERCLA	RWQCB	Places responsibility for releases of hazardous materials into the environment.	Obtain waste generator number and waste discharge/disposal permits as appropriate.
National Environmental Policy Act (NEPA)	U.S. Bureau of Reclamation	Out take of water from Tehama-Colusa Canal	7.1 May be required for Bureau release of water from canal.
State			
SWRCB Water Quality Orders	RWQCB	Regulates industrial storm water discharges during construction and operation of the facility.	Part of federal NPDES permit requirements. Compliance monitored by CVRWQCB. Section 8.14.2.2.
Porter-Cologne Water Quality Control Act	RWQCB	Controls discharge of wastewater to the surface and groundwaters of the state. Applies to wastewater discharged to septic leach field.	Discharge will be in accordance with CWA/Porter-Cologne NPDES/WDR permit. Section 8.14.5.2.
Safe Drinking Water & Toxic Enforcement Act	RWQCB	Proposition 65 prohibits certain discharges to drinking water sources.	Part of federal NPDES permit requirements. Compliance monitored by RWQCB.
California Water Code Section 461 & SWRCB Resolution 77-1	RWQCB	Encourages conservation of water resources.	Effective practices for water conservation and reuse were engineered into the facility design. Section 8.14.
California Environmental Quality Act (CEQA)	Colusa County	Water Supply superseded by CEC process	7.1 CEC review of CEQA equivalent process
Local			
General Plan	County	Address issues such as drainage, erosion control, hazardous material spill control, facility siting in flood zones, and storm water discharge.	Project will comply with the General Plan of Colusa County. Sections 8.14.3 and 8.14.4.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CVRWQCB = Central Valley Regional Water Quality Control Board
CWA = Clean Water Act
NPDES = National Pollutant Discharge Elimination System
RWQCB = Regional Water Quality Control Board
SWRCB = State Water Resources Control Board
WDR = Waste Discharge Requirements

Table 8.14-8
Colusa Power Plant Permits Summary
(Page 1 of 2)

Form 1 – Consolidated Permits Program – General Information	
Requirement	**AFC Section/Figure Number**
Topographic map – 1 mile beyond facility, showing existing and proposed intake and discharge structures and surface water bodies	Figure 3.5-3
Description of nature of business	Section 1.2, Facility Description; Chapter 7.0, Water Supply
Form 200 – Application Report of Waste Discharge General Information for NPDES Permits and Waste Discharge Requirements[a]	
Type of discharge	Sections 3.4.7.1, 3.5.6
Characterization of the discharge including design flows, list of constituents, and discharge concentration of each constituent, description and schematic drawing of treatment processes, description of BMPs and description of disposal methods.	Sections 3.4.7.1, 3.5.6
Site Map at 1:24,000 scale	Figure 3.5-3
Form 2E – Facilities Which Do Not Discharge Process Wastewater	
List of outfalls and name of receiving waters	Section 8.14, Figure 3.5-3
Effluent characteristics	Section 3.5.7
Frequency of flow and duration	Section 3.5.7
Treatment Systems	Section 3.4.7.
NOI to Comply with General Order 99-08-DWQ – Permit to Discharge Stormwater Associated with Construction Activities	
Area of construction activity including access roads	Section 3.6.4, Figure 3.5-2
Area to be disturbed by construction activities	Section 3.6.4, Figure 3.5-2
Percent of site that is impervious before and after construction	Section 3.6.4, Figures 3.5-1 and 3.5-3
Receiving water information	Figure 3.5-2
Status of the SWPPP	Section 8.14.7
Status of development and monitoring program	Section 8.14.7
Vicinity Map showing construction site 8.5 × 11 or 11 × 17	Figure 3.5-2

Table 8.14-8
Colusa Power Plant Permits Summary
(Page 2 of 2)

Form 1 – Consolidated Permits Program – General Information	
Requirement	**AFC Section/Figure Number**
NOI to Comply with Order No. 5-00-175 – Dewatering and other Low Threat Discharges to Surface Waters	
Discharge location and map at scale 1:24,000 that shows treatment system, discharge point, and surface waters	Figure 3.5-3
Type of discharge (pipeline tank/pressure testing)	Section 3.6.2.4
Evaluate and rule out containment or re-use discharge	Section 3.6.2.4
Treatment system schematic drawing	Figure 3.5-3
Receiving water information	Figure 3.5-2
Identify primary pollutants likely to be in discharge	Section 8.14.1.2.5
NOI to Comply with SWRCB Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001	
Total size of the facility in acres and percentage of site that is impervious	Section 3.4
Receiving water information	Section 8.14.1
Status of SWPPP and Monitoring Program	Section 8.14.7
Site Map	Figure 3.5-3
Application for Sewage Disposal System Permit	
Soil profile characterization, including percolation tests, leach field design.	Appendix P
Application for Obtaining Outgrants from the Bureau of Reclamation	
Brief description of the proposed project	Section 3.1
Legal land description	Section 3.2
Maps and drawings including plan and profile for proposed construction (e.g., turnouts, siphons, and other water delivery installations)	to be prepared during detailed design, see Section 7.2
Description of environmental impacts	Sections 8.2 and 8.14

Note: General Information Forms to be submitted with NPDES applications.

Sources:
1) USGS Topographic 30x60 Minute Series: Lakeport, California, 1994
2) FEMA Flood Insurance Rate Map, Colusa County Plan, 1989

LEGEND

- Creek
- Sacramento River
- Wildlife Refuge
- County Line

Floodplains

- Zone A: 100-year flood
- Zone B: Areas between 100-year and 500-year flood
- Area not mapped for flooding potential

Detail Area: See Figure 8.14-2

PROJECT SITE

PG&E Compressor Station

SACRAMENTO NATIONAL WILDLIFE REFUGE

DELEVAN NATIONAL WILDLIFE REFUGE

GLENN CO
COLUSA CO.

Scale in Miles: 0 2 4

Scale in Feet: 0 10,000 20,000

1:100,000

N

SURFACE WATER FEATURES

Colusa Power Plant
Reliant Energy
Colusa County, California

43-00066841.00

URS

FIGURE 8.14-1

5/25/01 vsa ..\46800-930\swf.cdr

Sources:
1) USGS Topographic Maps, 7.5 Minute Series:
Logan Ridge, California, 1973
Logandale, California, 1973
Sites, California, 1973
Maxwell, California, 1994
2) Olmstead and Davis, 1961

LEGEND

- #1 — Test Well
- Canal
- Creek
- Seasonal Streams and Ditches
- Inactive Earthquake Fault (Refer to Section 8.15)
- Groundwater Storage Units (approximate boundaries)
- B6 — Alluvial Fan, Delevan to Zamora
- B11 — Stony Creek Fan
- D3 — Colusa Basin

0 2000 4000
Scale in Feet
1:24,000

N

PROJECT SITE

PG&E Compressor Station

#1 #2 #3

CANAL-CROSS TIE

TEHAMA-COLUSA CANAL

GLENN-COLUSA CANAL

GLENN CO
COLUSA CO

DELEVAN ROAD

DIRKS ROAD

McDERMOTT ROAD

Siphon

BM 112

BM 104

BM 96

BM 91

BM 89

Hunte

Flume

BR 126

5

B11

B6

D3

HYDROGEOLOGIC SETTING

Colusa Power Plant
Reliant Energy
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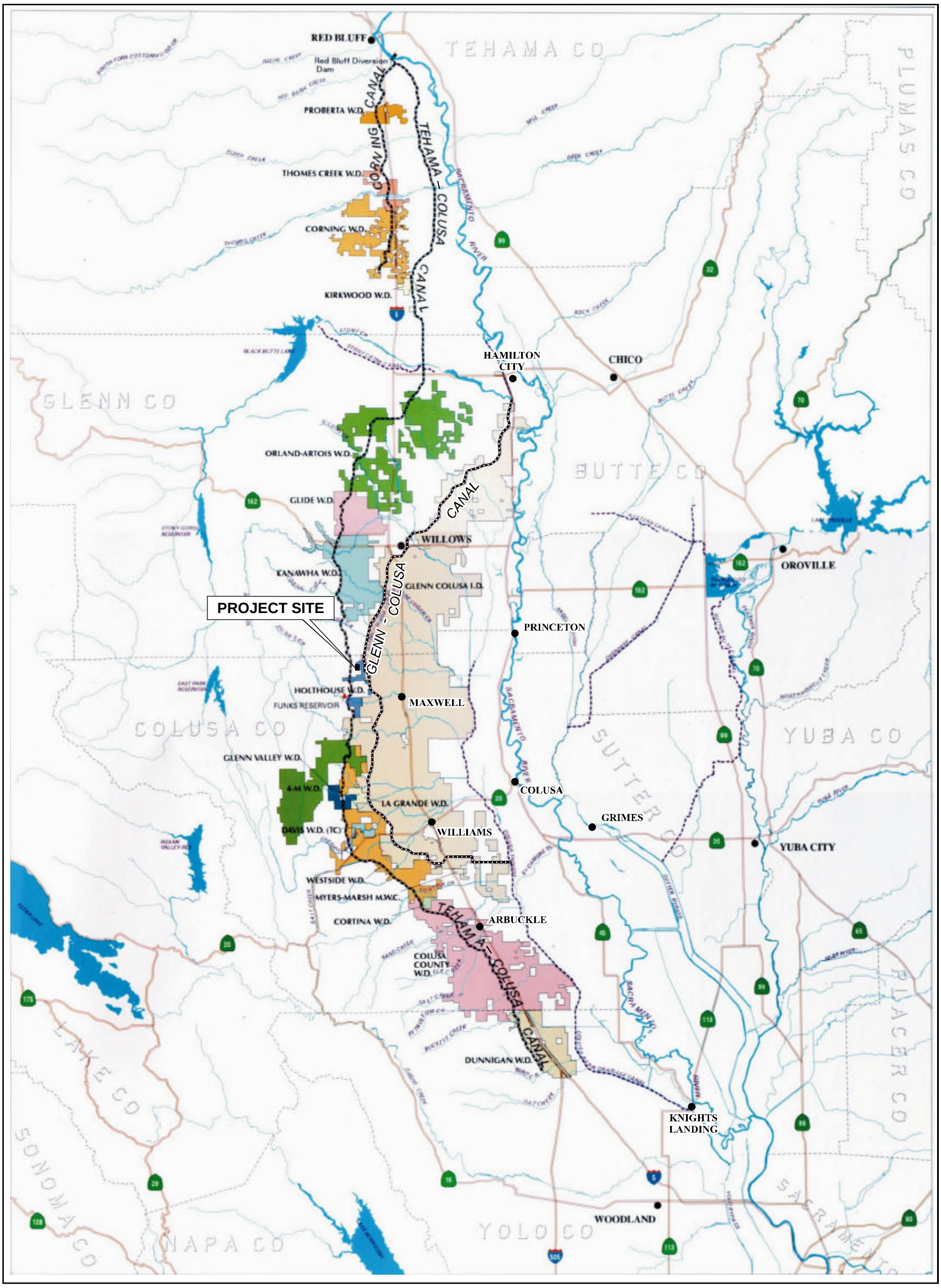
FIGURE 8.14-2

5/23/01 vsa ..\46800-930\hydro.cdr



Source:
Tehama-Colusa Canal Authority, July 1996

N

0 8 16

Scale in Miles

TEHAMA-COLUSA CANAL AND GLENN-COLUSA CANAL SYSTEMS

Colusa Power Plant
Reliant Energy
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FIGURE 8.14-3

5/16/01 vsa ..\46800-930\canalsys.cdr